CLAIM AMENDMENTS

Please amend Claims 1-5, 7, 8, 15-18, 21, 27, and 52 as follows.

1. (Currently Amended) An image pick-up apparatus comprising:

a plurality of ~~pixels, each pixel including a~~ photoelectric conversion ~~element~~ elements and ~~a~~ switching ~~element,~~ elements arranged on ~~an insulating~~ a substrate;

a wavelength converter positioned and configured to convert incident radiation to light having a wavelength detectable by ~~at least one of the~~ said photoelectric conversion elements;

a protective layer arranged on ~~the insulating~~ said substrate so as to cover ~~the plurality of pixels~~ said photoelectric conversion elements and said switching elements; and

~~a flattening~~ an additional layer, arranged ~~at least on the plurality of pixels so as to be positioned upon~~ on a surface of the protective layer;

wherein a material of said additional layer is different from that of said protection layer;

wherein a surface of the additional layer is flatter than the surface of the protection layer; and

wherein the wavelength converter ~~is arranged by being deposited on the flattening layer and~~ comprises a columnar crystal scintillator ~~which comprises a columnar crystal, and~~ deposited on a flat surface of said additional layer

~~wherein the plurality of pixels, the protective layer, and the flattening layer are situated between the insulating substrate and the wavelength converter~~.

2. (Currently Amended) An image pick-up apparatus according to Claim 1, wherein the ~~flattening~~ additional layer is obtained by flattening the protective layer provided on the ~~insulating~~ substrate.

3. (Currently Amended) An image pick-up apparatus according to Claim 1, wherein the ~~flattening~~ additional layer comprises a polyimide resin.

4. (Currently Amended) An image pick-up apparatus according to Claim 1, wherein a second ~~flattening~~ additional layer is provided on the wavelength converter.

5. (Currently Amended) An image pick-up apparatus according to Claim 4, wherein the second ~~flattening~~ additional layer covers the end face of the wavelength converter.

6. (Original) An image pick-up apparatus according to Claim 1, wherein the surface of the wavelength converter is flattened.

7. (Currently Amended) An image pick-up apparatus according to Claim 4, wherein a light reflection film is provided on the second ~~flattening~~ additional layer.

8. (Currently Amended) An image pick-up apparatus according to Claim 6, wherein a light reflection film is provided on the ~~flattened~~ wavelength converter.

9. - 10. (Cancelled)

11. (Previously Presented) An image pick-up apparatus according to Claim 1, wherein the scintillator comprises a CsI crystal.

12. (Original) An image pick-up apparatus according to Claim 7, wherein the light reflection film is made of an aluminum film.

13. (Original) An image pick-up apparatus according to Claim 8, wherein the light reflection film is made of an aluminum film.

14. (Original) An image pick-up apparatus according to Claim 8, having plural insulating substrates.

15. (Currently Amended) An image pick-up apparatus comprising:

~~comprising:~~

a plurality of insulating substrates arranged on a substrate;

a plurality of ~~pixels, each pixel including a~~ photoelectric conversion ~~element~~ elements and ~~a~~ switching ~~element~~ elements, arranged on each of the insulating substrates;

a wavelength converter configured and positioned to convert incident radiation to light having a wavelength detectable by ~~at least one of~~ the photoelectric conversion elements;

a protective layer arranged on ~~at least one of~~ the insulating substrates so as to cover the ~~plurality of pixels on the at least one insulating substrate~~ the photoelectric conversion elements and the switching elements; and

~~a flattening~~ an additional layer arranged ~~at least on the plurality of pixels on which the protective layer is arranged so as to be positioned upon~~ on a surface of the protective layer,

wherein a material of the additional layer is different from that of the photoelectric layer,

wherein a surface of the additional layer is flatter than the surface of the protective layer, and

wherein the wavelength converter ~~is arranged by being deposited on the flattening layer and~~ comprises a columnar crystal scintillator ~~which comprises a columnar crystal, and~~ deposited on a flat a surface of the additional layer

~~wherein the plurality of pixels on the at least one insulating substrate, the protective layer, and the flattening layer are situated between the insulating substrate and the wavelength converter~~.

16. (Currently Amended) An image pick-up apparatus according to Claim 15, wherein the ~~flattening~~ additional layer is obtained by flattening the protective layer provided on the insulating substrate.

17. (Currently Amended) An image pick-up apparatus according to Claim 15, wherein the ~~flattening~~ additional layer comprises a polyimide resin.

18. (Currently Amended) An image pick-up apparatus according to Claim 15, wherein the ~~flattening~~ additional layer is arranged on the plurality of insulating substrates.

19-20. (Cancelled)

21. (Previously Presented) An image pick-up apparatus according to Claim 15, wherein the scintillator comprises a CsI crystal.

22. (Cancelled)

23. (Currently Amended) An image pick-up system comprising:

an image pick-up apparatus including: a plurality of ~~pixels, each pixel producing a signal and including a~~ photoelectric conversion ~~element~~ elements and ~~a~~ switching ~~element,~~ elements arranged on ~~an insulating~~ a substrate; a wavelength converter configured and positioned to convert incident radiation to light having a wavelength detectable by ~~at least one of~~ the photoelectric conversion elements; a protective layer arranged on the ~~insulating~~ substrate so as to cover the ~~plurality of pixels~~ photoelectric conversion elements and the switching elements; and ~~a~~ ~~flattening~~ an additional layer ~~arranged at least on the plurality of pixels so as to be positioned upon~~ on a surface of the protective layer;

wherein material of said additional layer is different from that of the protective layer,

wherein a surface of the additional layer is flatter than the surface of the protective layer, and

wherein the wavelength converter is ~~arranged by being deposited on the flattening layer and~~ comprises a columnar crystal scintillator ~~which comprises a columnar crystal,~~ deposited on a flat surface of the additional layer;

~~wherein the plurality of pixels, the protective layer, and the flattening layer are situated between the insulating substrate and the wavelength converter;~~

a signal processor configured to process the signal from the image pick-up apparatus; and

a display configured to display the processed signal from the signal processor.

24. (Previously Presented) An image pick-up system according to Claim 23, further comprising a telecommunication device configured to transfer the signal from the signal processor.

25. (Previously Presented) An image pick-up apparatus system to Claim 23, further comprising a recorder configured to record the signal from the signal processor.

26. (Previously Presented) An image pick-up system according to Claim 23, further comprising a storage device configured to store the signal from the signal processor.

27. (Currently Amended) An image pick-up system comprising:

a plurality of insulating substrates arranged on a substrate; a plurality of ~~pixels, each pixel producing a signal and including a~~ photoelectric conversion ~~element~~ elements and ~~a~~ switching ~~element~~ elements, arranged on each of the insulating substrates; a wavelength converter configured and positioned to convert incident radiation to light having a wavelength detectable by ~~at least one of~~ the photoelectric conversion elements; a protective layer arranged on ~~at least one of~~ the insulating substrates so as to cover the plurality of ~~pixels on the at least one insulating substrate~~ photoelectric conversion elements and switching elements; and ~~a flattening~~ an additional layer arranged ~~at least on the plurality of pixels on which the protective layer is arranged so to be positioned upon~~ on a surface of the protective layer;

wherein material of said additional layer is different from that of the protective layer,

wherein a surface of the additional layer is flatter from the surface of the protective layer, and

wherein the wavelength converter ~~is arranged by being deposited on the flattening layer and~~ comprises a columnar crystal scintillator ~~which comprises a columnar crystal, and~~ deposited on a flat surface of the additional layer;

~~wherein the plurality of pixels on the at least one insulating layer, the protective layer, and the flattening layer are situated between the insulating substrate and the wavelength converter;~~

a signal processor configured to process the signal from the image pick-up apparatus; and

a display configured to display the processed signal from the signal processing means.

28. (Previously Presented) An image pick-up system according to Claim 27, further comprising a recorder configured to record the processed signal from the signal processor .

29. (Previously Presented) An image pick-up system according to Claim 27, further comprising a telecommunication device configured to transfer the signal from the signal processor.

30. (Previously Presented) An image pick-up system according to Claim 27, further comprising a storage device configured to store the signal from the signal processor.

31.-51. (Canceled)

52. (Currently Amended) An image pick-up apparatus comprising:

a plurality of ~~pixels, each pixel including a~~ photoelectric conversion ~~element~~ elements and ~~a~~ switching ~~element~~ elements, arranged on ~~an insulating~~ a substrate;

a wavelength converter configured and positioned to convert incident radiation to light having a wavelength detectable by ~~at least one of~~ the photoelectric conversion elements;

a protective layer arranged on the ~~insulating~~ substrate so as to cover the ~~plurality of pixels~~ photoelectric conversion elements and switching elements; and

~~a flattening~~ an additional layer arranged ~~at least on the plurality of pixels so as to be positioned upon~~ on a surface of the protective layer;

wherein material of said additional layer is different from that of the protective layer,

wherein a surface of the additional layer is flatter than the surface of the protective layer,

wherein the wavelength converter ~~is arranged by being deposited on the flattening layer and~~ comprises a columnar crystal scintillator ~~which comprises a columnar crystal~~ deposited on a flat surface of the additional layer,and

~~wherein the plurality of pixels, the protective layer, and the flattening layer are situated between the insulating substrate and wavelength converter, and~~

wherein the photoelectric conversion elements comprise non-crystalline semiconductor material.

53. (Previously Presented) The image pick-up apparatus according to Claim 52, wherein the photoelectric conversion elements comprise an amorphous silicon film.